$V_{CC} = 25\ V$ $\quad R_C = 3\ k\Omega$ $\quad (R_{out})$ $\quad g_m = 192.3\ k\Omega^{-1}$

$I_C = 5\ mA$ $\quad A \simeq 122.71$ $\quad r_\pi = 0.78\ k\Omega$

$R_E = 1\Omega$ $\quad R_{in} \approx 4.53\ k\Omega$

$$\left(\frac{R_{in}}{R_{in}+0.6}\right) A \left(\frac{R_{in}}{R_{in}+R_{out}}\right) A \cdot \frac{1}{1+R_{out}} = 2000$$

$$\text{or} \quad \frac{R_{in}^2}{(R_{in}+0.6)(R_{out}+1)(R_{in}+R_{out})} = \frac{2000}{A^2}$$

$$\text{or} \quad \frac{R_{in}^2}{(R_{in}+0.6)\,4\,(R_{in}+3)} = \frac{2000}{A^2}$$

$$\text{or} \quad \frac{R_{in}^2}{(R_{in}+3)(R_{in}+0.6)} = \frac{2000}{A^2}$$

Any further change can be achieved by bypassing R_E partia